

DVAC

DUCT VENTILATION AIR CONDITIONING Co. (W.L.L.)

Welded Circular Ducts Catalogue































As per SMACNA (2nd Edition-1995 & 3rd Edition-2005)

**Materials: Black Steel, Stainless Steel
316 or 304, Galvanized & Aluminum**



Welded Circular Ducts

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1- INTRODUCTION

Welded Circular Black Steel Ducts are designed and created to vent grease vapors from cooking equipment to outside the building safely. At DVAC Factory we give special importance in fabricating those types of duct works, knowing the safety requirements and hazards in venting those types of fumes.

DVAC Welded Circular Black Steel Ducts are made from **Cold Rolled Coils**, a minimum of 16 gauge metal, which complies with **NFPA 96**. This type of duct is mainly used for the kitchen ventilation system; it will be fixed to the exhaust fans that take the air/odor to outside of the kitchens/cooking areas. In restaurants/kitchens, the temperature usually goes over 100 degrees, besides the high humidity levels, which occurs a Non-Healthy and uncomfortable environment in the restaurant.

When the Ventilation System is well-designed, it will be more than just an exhaust hood; It will involve the complex interface of the kitchen with the other spaces of the restaurant.

However, Stainless Steel Ducts can be applied for same usage.

Hence, this kind of Ventilation System represents one of the largest kitchen equipment expenses.

* **DVAC Welders** are qualified and obtained **WPQ (Welding Procedures Qualifications)** certified by third party based on **WPS (Welding Procedures Specifications)** accomplished.





2- FABRICATION PROCEDURES

Fabrication of Welded Circular Ducts shall be based on Drawings/Take off provided by the client, by following consequently below Procedures:

- a) Shop Drawings will be encoded into our CAD-Mep Software, to be converted into individual Plans. All items shall be Tagged on the drawings. Individual Duct pieces will be nested on sheets to maximize sheet usage on CNC Machines avoiding material loss.
- b) An accurate BOQ shall be issued including connectors.
- c) The fabrication Data shall be saved as NC Program and shall be printed out into different Job Orders (Straight & Fittings).
- d) The Job Orders shall be sent to the CNC Plasma & Coil Line machines for Cutting and items identification as follows:
 - 1- For Straight Circular ducts, the Coil shall be cut into sheets through the Coil Line Machine, then to the Roll-Forming machine; then after to be welded using TIG Welding Machine. (Straight Duct Standard Size shall be 1220mm).
 - 2- For Fittings (*Elbow, Tee, Reducer, etc.*), the sheets shall be cut through Plasma Cutting Machine into individual marked pieces, then to Roll-Forming machine in assembly area; then after to be welded with TIG Welding Machine.
- e) All fabricated items shall be labeled with following data:



- 1- Tag No.,
- 2- PO Reference,
- 3- Date,
- 4- Customer Name,
- 5- Project Name,
- 6- Job Order No.,
- 7- Type of Materials (*GI, SS, BS, Alum.*)
- 8- Weight, Length, Area,
- 9- Insulation Thickness & Density (if any)
- 10- Connector Dimensions
- 11- Item Type (*Straight, Elbow, Tee Reducer, etc.*)

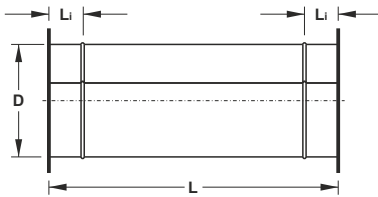
	Item: SE S5		
	P.O. Ref.: 17301195	Date: 10/29/2018	
Customer: M/S. DVAC Duct Ventilation Air Conditioning Co.WLL			
Project: Workshop			
Job Name: N60 - GROUND FLOOR			
Material: Black Steel x 10	Reducer (RCLL) 1500		
Weight: 219.43 (kg)	CF: 1100	CS:	Service: Smoke Extract
Area: 6.86 (sqm)			
Ins:			Length/Angle: 1500 (mm)
Double Wall: No	Skin:	Skin Area: (sqm)	MADE IN QATAR

- f) Quantity of items ready for delivery shall be bar coded by our software, same as mentioned in the Delivery Reports.
- g) QA/QC shall be conducted before each delivery in order to indicate the "Passed" Tag or "Rejected"

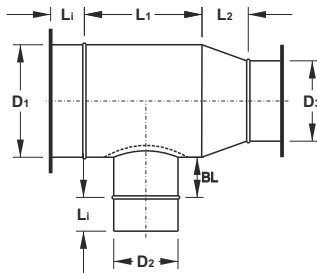
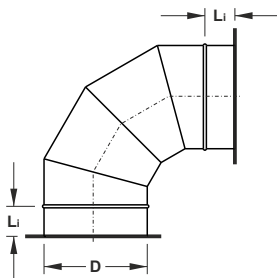
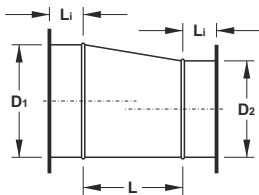
CIRCULAR FITTINGS DUCT (Stiffening Details)

Metal Welding Types:

- TIG Welding : - Stainless Steel
- Aluminum Metal
- MIG Welding: - Black Steel
- Galvanized Steel



With Outturned Stiffening Corrugation



Dimensions		
$\Phi D, D_1, D_2, D_3, D_4$ nom (mm)	Circumference πd (m)	L_i nom (mm)
100	0.314	50
125	0.393	50
140	0.440	50
150	0.471	50
160	0.503	50
180	0.565	50
200	0.628	50
224	0.704	50
250	0.785	50
280	0.880	50
300	0.942	50
315	0.990	50
355	1.115	50
400	1.257	50
450	1.414	50
500	1.571	50
550	1.728	50
560	1.759	50
600	1.885	50
630	1.979	50
650	2.042	50
710	2.231	50
750	2.356	50
800	2.513	50
850	2.670	50
900	2.827	50
950	2.985	50
1000	3.142	50
1050	3.299	50
1100	3.456	50
1120	3.519	50
1150	3.613	50
1200	3.770	50
1250	3.927	50
1300	4.084	50
1350	4.241	50
1400	4.398	100
1450	4.555	100
1500	4.712	100
1600	5.027	100
1800	5.655	100
2000	6.283	100
2300	7.226	100
2500	7.854	100

* Materials Used for Ductworks:

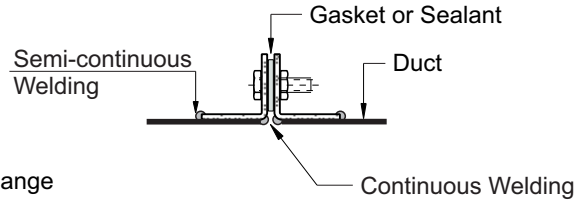
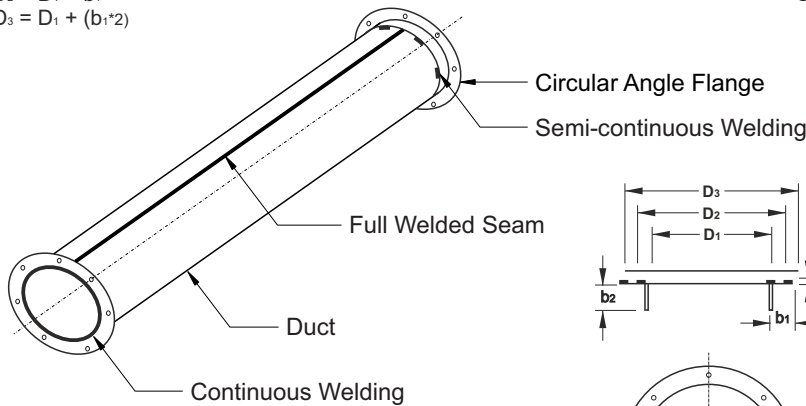
- Black Steel : Complying with ASTM A 366/A 366M, Cold-rolled.
- Stainless Steel : Complying with ASTM A240M / A480M, Grade 304, 304L, 316 & 316L.
- Galvanized Steel : L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- Aluminum Metal : Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

CONNECTOR DETAILS

Circular Angle Flange Welded

- CAF
- $D_2 = D_1 + b_1$
- $D_3 = D_1 + (b_1 \times 2)$

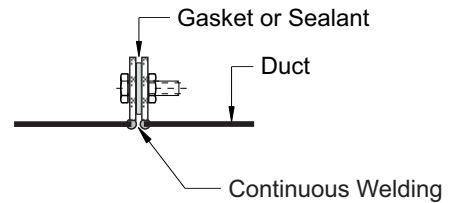
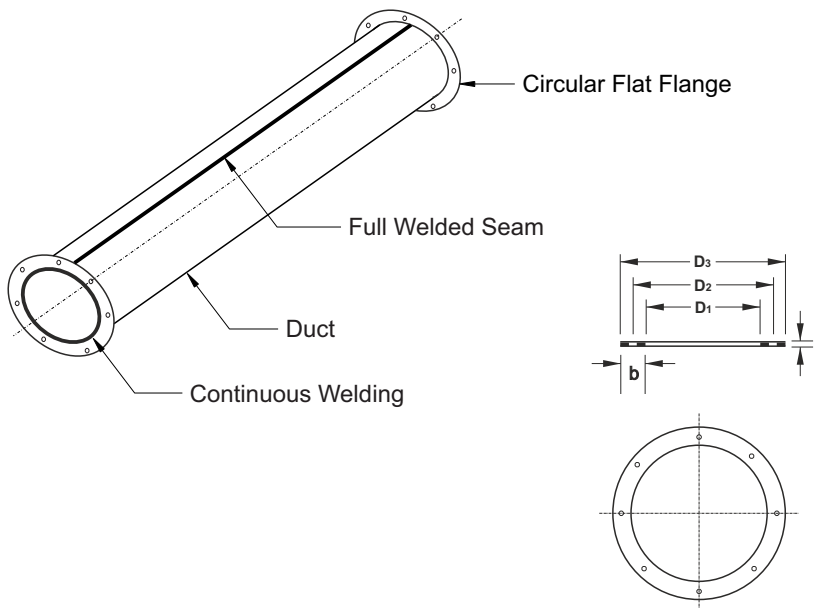


D ₁	Bolts		b ₁ x b ₂ x t
	Dim.	N	
Up to 125	M6	4	25x25x2.5
150 to 250	M6	6	25x25x2.5
280 to 355	M8	8	30x30x3
400 to 500	M8	12	40x40x4
550 to 710	M10	16	50x50x5
750 to 1400	M10	24	50x50x5

Ordering example
BS CAF 200
Material
Code
Dimension D

Circular Flat Flange Welded

- CFF
- $D_2 = D_1 + b$
- $D_3 = D_1 + (b \times 2)$



D ₁	Bolts		b x t
	Dim.	N	
Up to 125	M6	4	25x3
150 to 250	M6	6	30x3
280 to 355	M8	8	40x4
400 to 500	M8	12	40x4
550 to 710	M10	16	40x5
750 to 1400	M10	24	50x5

Ordering example:
BS CFF 200
Material
Code
Dimension D

* Materials Used for Ductworks:

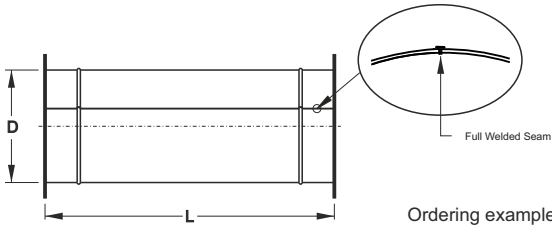
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- **Galvanized Steel** _____: L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- **Aluminum Metal** _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

FITTINGS DETAILS

Circular Straight Duct Welded

- CSD
- Standard Length: 1220mm



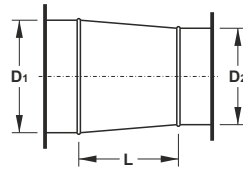
Ordering example:
BS CSD 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

A

Concentric Reducer Welded

- RCLL
- $L = D_1 - D_2$
- Minimum Length 100mm, Maximum Length 400mm



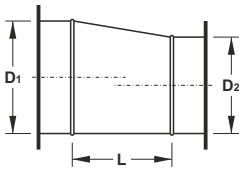
Ordering example:
BS RCLL 200 150-1.5 W

Material _____
Code _____
Dimension D1 _____
Dimension D2 _____
Thickness _____
Welded _____

B

Eccentric Reducer Welded

- CLL
- $L = D_1 - D_2$
- Minimum Length 100mm, Maximum Length 400mm



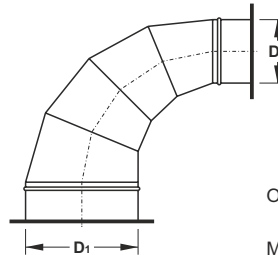
Ordering example:
BS CLL 200 150-1.5 W

Material _____
Code _____
Dimension D1 _____
Dimension D2 _____
Thickness _____
Welded _____

C

Reducing Segmented Bend Welded

- RSB



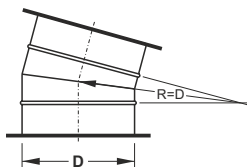
Ordering example:
BS RSB 200 150-1.5 W

Material _____
Code _____
Dimension D1 _____
Dimension D2 _____
Thickness _____
Welded _____

D

Bend 15° Welded

- BFL15°
- Standard 2-Gore



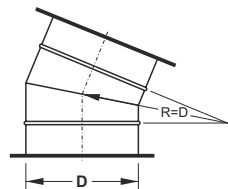
Ordering example:
BS BFL15° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

E

Bend 22.5° Welded

- BFL22.5°
- Standard 2-Gore



Ordering example:
BS BFL22.5° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

F

* Materials Used for Ductworks:

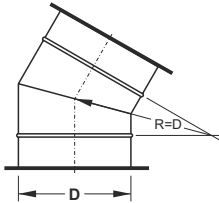
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- **Aluminum Metal** _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

FITTINGS DETAILS

Bend 30° Welded

- BFL30°
- Standard 2-Gore



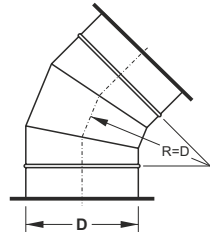
Ordering example:
BS BFL30° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

G

Bend 45° Welded

- BFL45°
- Standard 3-Gore



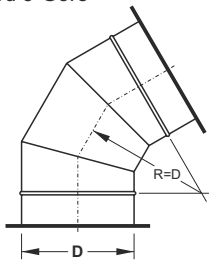
Ordering example:
BS BFL45° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

H

Bend 60° Welded

- BFL60°
- Standard 3-Gore



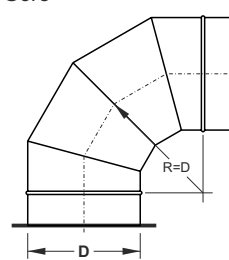
Ordering example:
BS BFL60° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

I

Bend 90° Welded

- BFL90°
- Standard 4-Gore



Ordering example:
BS BFL90° 200-1.5 W

Material _____
Code _____
Dimension D _____
Thickness _____
Welded _____

J

Mitered Elbows

Duct Velocity	R/D Ratio	Number of Mitered Pieces		
	Centerline Radius to Duct Diameter	90°	60°	45°
Up to 1000 fpm (5mps)	0.6	4	3	3
1001 to 1500 fpm (5 to 7.5mps)	1.0	4	3	3
above 1500 fpm (7.5mps)	1.5	5	4	3

* Materials Used for Ductworks:

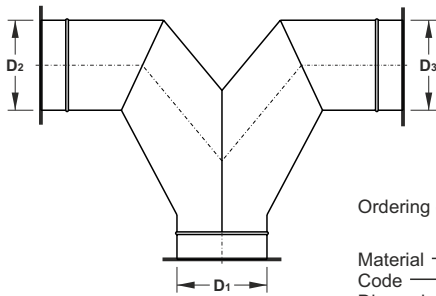
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- Stainless Steel _____: Complying with ASTM A240M / A480M, Grade 304, 304L, 316 & 316L.
- Galvanized Steel _____: L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- Aluminum Metal _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

FITTINGS DETAILS

Twin Segment Bend Welded

• TSB

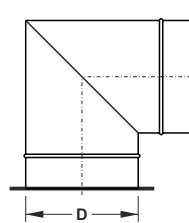


Ordering example:
BS TSB 200 150 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Dimension D₃ _____
 Thickness _____
 Welded _____

K

2 Segment Bend 90° Welded

• 2SB90°

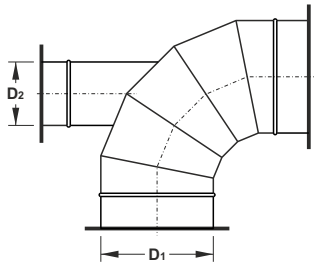


Ordering example:
BS 2SB90° 200-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Thickness _____
 Welded _____

L

Bend 90° with Branch Welded

• BFLB90°

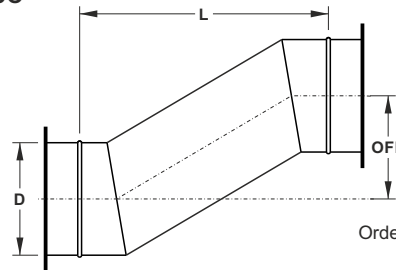


Ordering example:
BS BFLB90° 200 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Thickness _____
 Welded _____

M

Circular Offset Welded

• CO

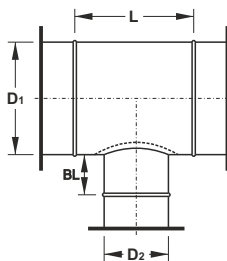


Ordering example:
BS CO 200 300 500-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Offset OFF _____
 Length L _____
 Thickness _____
 Welded _____

N

Centric Tee Piece Welded

• TCL
 • L = D₂ + 100mm



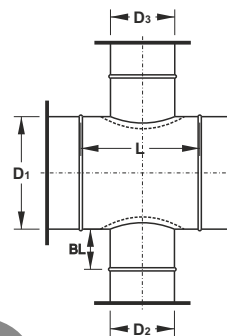
D ₂	BL
100 to 650mm	50mm
710 to 1400mm	100mm

Ordering example:
BS TCL 200 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Thickness _____
 Welded _____

O

Centric Cross Tee Piece Welded

• XCL
 • L = the longer of D₂ or D₃ + 100mm



D ₂ & D ₃	BL
100 to 650mm	50mm
710 to 1400mm	100mm

Ordering example:
BS XCL 200 150 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Dimension D₃ _____
 Thickness _____
 Welded _____

P

* Materials Used for Ductworks:

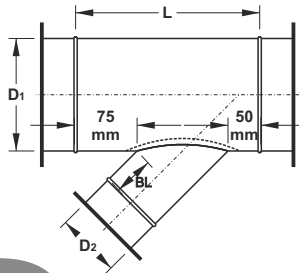
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- **Galvanized Steel** _____: L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- **Aluminum Metal** _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

FITTINGS DETAILS

Centric Tee Piece 45° Welded

- TCL45°
- L = $D_2 \times 1.5 + 100\text{mm}$



D ₂	BL
100 to 250mm	50mm
280 to 355mm	75mm
400 to 650mm	100mm
710 to 1400mm	150mm

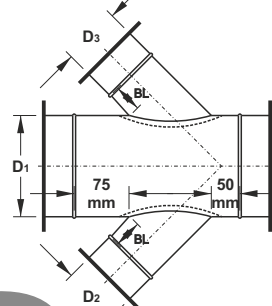
Ordering example:
BS TCL45° 200 150-1.5 W

Material _____
Code _____
Dimension D₁ _____
Dimension D₂ _____
Thickness _____
Welded _____

Q

Centric Cross T- Piece 45°

- TCCL45°
- L = the longer of D₂ or D₃ x 1.5 + 100mm



D ₂ & D ₃	BL
100 to 250mm	50mm
280 to 355mm	75mm
400 to 650mm	100mm
710 to 1400mm	150mm

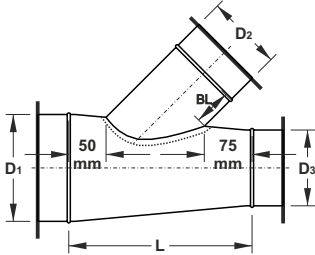
Ordering example:
BS TCCL45° 200 150 150-1.5 W

Material _____
Code _____
Dimension D₁ _____
Dimension D₂ _____
Dimension D₃ _____
Thickness _____
Welded _____

R

Reducing Tee 45° Welded

- RT45°
- L = $D_2 \times 1.5 + 100\text{mm}$



D ₂	BL
100 to 250mm	50mm
280 to 355mm	75mm
400 to 650mm	100mm
710 to 1400mm	150mm

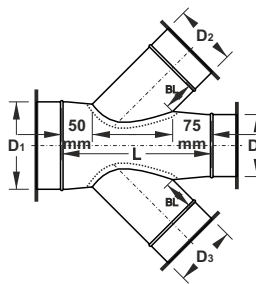
Ordering example:
BS RT45° 200 150 150-1.5 W

Material _____
Code _____
Dimension D₁ _____
Dimension D₂ _____
Dimension D₃ _____
Thickness _____
Welded _____

S

Reducing Cross Tee 45° Welded

- RCT45°
- L = the longer of D₂ or D₃ x 1.5 + 100mm



D ₂ & D ₃	BL
100 to 250mm	50mm
280 to 355mm	75mm
400 to 650mm	100mm
710 to 1400mm	150mm

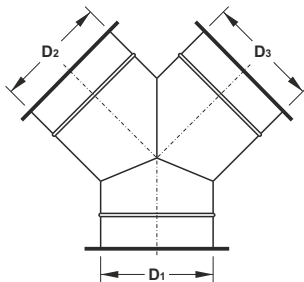
Ordering example:
BS RCT45° 200 150 150 150-1.5 W

Material _____
Code _____
Dimension D₁ _____
Dimension D₂ _____
Dimension D₃ _____
Dimension D₄ _____
Thickness _____
Welded _____

T

Y - Tee Welded

- TY45°
- 30°, 45° and 60° available
- D₁ = D₂ = D₃



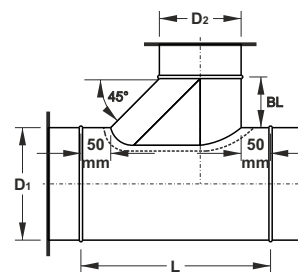
Ordering example:
BS TY45° 200-1.5 W

Material _____
Code _____
Dimension D₁ _____
Thickness _____
Welded _____

U

Shoe Tee - Offset Welded

- STO
- L = $D_2 + BL + 100\text{mm}$



D ₂	BL
100 to 200mm	100mm
225 to 355mm	175mm
400 to 650mm	250mm
710 to 1400mm	300mm

Ordering example:
BS STO 200 150-1.5 W

Material _____
Code _____
Dimension D₁ _____
Dimension D₂ _____
Thickness _____
Welded _____

V

* Materials Used for Ductworks:

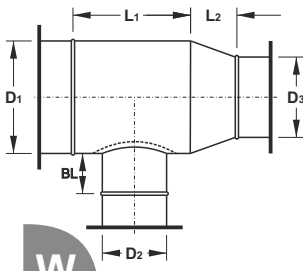
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- **Galvanized Steel** _____: L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- **Aluminum Metal** _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm

FITTINGS DETAILS

Centric Tee Piece with Reducer Welded

- TCPL
- $L_1 = D_2 + 150\text{mm}$
- $L_2 = D_1 - D_3$
- Minimum L_2 100mm,
Maximum L_2 400mm



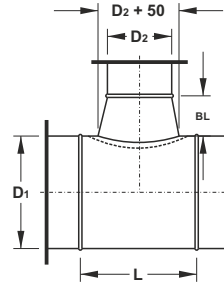
D ₂	BL
100 to 650mm	50mm
710 to 1400mm	100mm

Ordering example:
BS TCPL 200 150 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Dimension D₃ _____
 Thickness _____
 Welded _____

W

Conical Tee Welded

- TC
- $L = D_2 + 150\text{mm}$



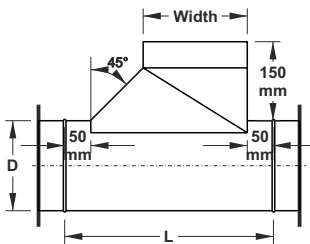
D ₂	BL
100 to 200mm	150mm
224 to 400mm	200mm
450 to 650mm	250mm
710 to 1400mm	300mm

Ordering example:
BS TC 200 150-1.5 W
 Material _____
 Code _____
 Dimension D₁ _____
 Dimension D₂ _____
 Thickness _____
 Welded _____

X

Rectangular Shoe with Pipe Welded

- RSWP
- $L = \text{Width} + 200\text{mm}$

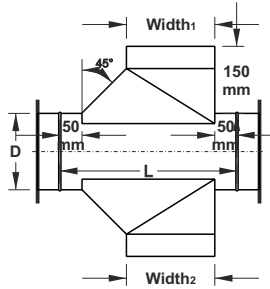


Ordering example:
BS RSWP 200 300x150-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Dim. Width x Depth _____
 Thickness _____
 Welded _____

Y

Rectangular Cross Shoe with Pipe Welded

- RCSWP
- $L = \text{the longer of Width}_1 \text{ or Width}_2 + 200\text{mm}$

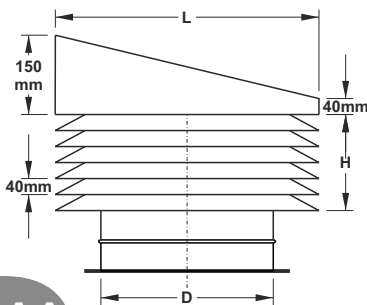


Ordering example:
BS RCSWP 200 300x150 300x150-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Dim. Width₁ x Depth₁ _____
 Dim. Width₂ x Depth₂ _____
 Thickness _____
 Welded _____

Z

Circular Rain Cap Welded

- CRC
- $L = D + 200\text{mm}$
- H = as per Air Flow

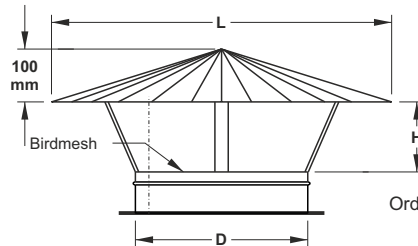


Ordering example:
BS CRC 200-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Thickness _____
 Welded _____

AA

Rain Cowl Welded

- RC
- $L = D + 200\text{mm}$
- H = as per Air Flow



Ordering example:
BS RC 200-1.5 W
 Material _____
 Code _____
 Dimension D _____
 Thickness _____
 Welded _____

AB

* Materials Used for Ductworks:

- **Black Steel** _____: Complying with ASTM A 366/A 366M, Cold-rolled.
- **Stainless Steel** _____: Complying with ASTM A240M / A480M, Grade 304, 304L, 316 & 316L.
- **Galvanized Steel** _____: L.F.Q. Complying with ASTM A653 and Having G90 Coating Designation.
- **Aluminum Metal** _____: Complying with ASTM B209, Alloy 3003, Temper H14.

* Circular Duct Wall Thickness from 1.0mm to 6mm



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Remarks: _____



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